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Local decomposition of solid solutions at the ferroelectric-antiferroelectric interphase boundaries and formation of nanostructures in the process of phase transformation[1] V.L. SOBOLEV, South Dakota School of Mines and Technology, Rapid City, SD 57701, V.M. ISHCHUK, Institute for Single Crystals, 61001 Kharkov, Ukraine, Z.A. SAMOYLENKO, Donetsk Physical-Engineering Institute, 81114 Donetsk, Ukraine, N.A. SPIRIDONOV, Science and Engineering Center "Reaktivelektron", 83096 Donetsk, Ukraine — Local decomposition of $(PbLa)(ZrTi)O_3$ near the interphase boundaries separating domains of coexisting FE and AFE phases was investigated. We studied the local decomposition kinetics in the process of aging of samples quenched to room temperature from the paraelectric phase. Mechanisms defining the kinetics of the attainment of the equilibrium state of coexisting FE and AFE domains (with sizes of 20 to 30 nm) are analyzed. There are two main mechanisms determining the establishing of the equilibrium inhomogeneous chemical composition. The slower mechanism is the diffusion of the oxygen vacancies the nonequilibrium concentration of which was created during the annealing at $T > T_c$. The faster process is due to the cation diffusion caused by the local mechanical stresses at the interphase boundaries. The sizes of segregates formed at the interphase boundaries are from 8 to 15 nm.

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